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Nomenclatural notes on some ginkgoalean fossil plants from China

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Abstract　Two morphotaxa of ginkgoalean fossil plants from China bear illegitimate specific names, viz. *Sphenobaiera biloba* S. N. Feng (1977) and *S. rugata* Z. Q. Wang (Dec. 1984), that are heterotypic later homonyms of *S. biloba* Prynada (1938) and *S.*? *rugata* Z. Y. Zhou (Mar. 1984) respectively. Under Art. 53.1 and 7.3 of the *Vienna Code*, new specific names are proposed to supersede these illegitimate names. Two other names, viz. *Baiera ziguiensis* F. S. Meng (1987) and *Ginkgoites elegans* S. Yang, B. N. Sun & G. L. Shen (1988), were not validly published, because no nomenclatural type was definitely indicated. New species are instituted for the two morphotaxa here. Although the specific name *Ginkgoites elegans* Cao (1992) was antedated by *Ginkgoites elegans* S. Yang, B. N. Sun & G. L. Shen (1988), it still remains available for use, as the latter name has no status under the *Vienna Code* (Art. 12, 37) and thus no priority over *Ginkgoites elegans* Z. Y. Cao.

Key words　Ginkgoales, *Ginkgoites*, *Baiera*, *Sphenobaiera*, morphospecies, nomenclature.

In compiling the Chinese record of fossil plants described since 1865, several illegitimate and/or not validly published names of ginkgoalean morphotaxa were found. They are either later homonyms or were published without a definite indication of the type (Art. 53.1 and 37.1, 2 of the *Vienna Code*) (McNeil et al., 2006). In this note, new names are proposed to supersede the illegitimate names, and new species are instituted for the morphotaxa that were not validly published previously. Another name that is preoccupied by an earlier designation is mentioned in the note. It remains, however, unchanged, since the earlier name was not validly published.

1. Sphenobaiera fengii X. W. Wu & Y. D. Wang, nom. nov.

S. biloba S. N. Feng in Fossil Atlas Central South China 2: 668, pl. 250, fig. 1. 1977, non *Sphenobaiera biloba* B. D. Prynada (1938). Type: China. Hunan (湖南): Xinhua (新化), Ma’anshan (马鞍山), Upper Permian Lungtan (Longtan) Formation (龙潭组), *P25141* (holotype, YIGMR! Yichang Institute of Geology and Mineral Resources, Chinese Academy of Geological Sciences=formerly Hopei Institute of Geological Sciences, 中国地质科学院宜昌地质矿产研究所=原湖北地质科学研究所).

Sphenobaiera biloba B. D. Prynada (1938, p. 47, pl. 5, fig. 1; Samylina, 1967) has been known as a Lower Cretaceous species originally described from the Kolyma River Basin of northeastern Asia. It is distributed also in Inner Mongolia and Liaoning Province of northeastern China (Chen et al., 1988; Deng, 1995; Deng et al., 1997). As a later homonym, *S. biloba* S. N. Feng (Fossil Atlas Central South China 2: 668; Feng et al., 1977) is illegitimate and should be substituted. Here, a new specific name after the author S. N. Feng, *Sphenobaiera fengii* X. W. Wu & Y. D. Wang, is proposed and typified by the type specimen of *Sphenobaiera biloba* S. N. Feng (Art. 7.3).

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2. Sphenobaiera wangii X. W. Wu, Z. Y. Zhou & Y. D. Wang, nom. nov.

S. rugata Z. Q. Wang in Palaeont. Atlas N. China 2: 278, pl. 118, figs. 1, 1a. Dec. 1984 [non *Sphenobiaera? rugata* Z. Y. Zhou (Mar. 1984)]. Type: China. Shanxi (山西): Linxian (临县), Kaihua (开化), Middle to Upper Triassic Yenchang (Yanchang) Formation (延长组), *P0114* (holotype, NIGPAS! Nanjing Institute of Geology and Palaeontology, Chinese Academy of Sciences,中国科学院南京地质古生物研究所).

Sphenobaiera rugata Z. Q. Wang (1984, p. 278, pl. 118, figs.1–5) and *Sphenobaiera? rugata* Z. Y. Zhou (1984, p. 44, pl. 26, figs. 1–1g) were published in the same year. The name *Sphenobaiera? rugata* Z. Y. Zhou which is erected based on a ginkgoalean leaf from the Lower Jurassic Xiwan Formation of Xiwan, Guangxi, China, appeared in March, 1984 and has priority over *Sphenobaiera rugata* Z. Q. Wang named for a Triassic specimen issued in December, 1984 (Article 53.1). *Sphenobaiera wangii* X. W. Wu, Z. Y. Zhou &Y. D. Wang, a nomen novum after the author Z. Q. Wang, is therefore proposed to supersede the later homonym *S. rugata* Z. Q. Wang. The type specimen of *S. rugata* Z. Q. Wang (1984. Palaeont. Atlas N. China 2: pl. 118, fig. 1, no. *P0114*) is transferred to *Sphenobaiera wangii* X. W. Wu, Z. Y. Zhou &Y. D. Wang.

3. Baiera mengii X. W. Wu & Y. D. Wang, sp. nov.

B. ziguiensis F. S. Meng in Biostratigr. Yangtze Gorge Area, 4: 255, pl. 35, fig. 3, 1987, non *B. ziguiensis* G. X. Chen (1984). Type: China. Hubei (湖北): Zigui (秭归), Chezhanping (车站坪), Lower Jurassic Hsiangchi (Xiangxi) Formation (香溪组), *P82219* (holotype, YIGMR).

Diagnosis: Leaf petiolate. Petiole more than 40 mm long and 3 mm wide. Lamina flabellate to cuneate, with nearly straight lateral margins forming a basal angle of 60°–70°. Lamina firstly deeply divided down to the apex of petiole into two nearly equal halves; each half further divided three times into 16 or more ultimate segments. Segments elongate, narrowly cuneate to linear, about 1.5–4 mm wide, with an obtusely acute or rounded apex. Veins 2–3 per segments, branching in the lower part at acute angles and parallel to the lateral margin throughout the length of segments.

Leaves amphistomatic. Cuticle of one (? upper) surface of the leaf showing distinct alternate vein courses and stomatal strips. Epidermal cells with straight walls, more elongate and regularly arranged, and with thicker lateral anticlinal walls in the vein course than in the stomatal strip. Stomata scattered and irregularly distributed. Cuticle of the other (? lower) surface consisting of less distinct vein courses and stomatal strips. Epidermal cells with smooth periclinal and straight anticlinal walls, elongate to rectangular in the vein course and polygonal and irregularly arranged in the stomatal strip. Stomata scattered mostly in the stomatal strip, randomly oriented, but longitudinal ones predominant. Guard cells sunken; subsidiary cells 5–6 in number, only thickened at the proximal side, forming a rim surrounding the pit mouth.

Baiera ziguiensis F. S. Meng (In: Yichang Institute of Geology and Mineral Resources, Chinese Academy of Geological Sciences ed. Biostratigr. Yangtze Gorge Area, 4: 255, pl. 35, figs. 2, 3; pl. 37, figs. 4, 5, 1987) was effectively published, but with no definite type specimen indicated, despite that two specimens (*P82218*, *P82219*) were designated as syntypes. According to Art. 37.1, 2 of *the Vienna Code*, it is not a validly published name. A new species is here instituted for this morphotaxa, with the specific epithet after the author F. S. Meng. One of the specimens of *B. ziguiensis* F. S. Meng (1987. Biostratigr. Yangtze Gorge Area, 4: pl. 35, fig. 3, no. *P82219*) is indicated as the holotype, and an English diagnosis is given. The description, discussion and illustration published for *Baiera ziguiensis* F. S. Meng are all transferred to *Baiera mengii* X. W. Wu & Y. D. Wang (Article 7.3). The earlier validly published name *Baiera ziguiensis* G. X. Chen (Chen, 1984, p. 604, 801, pl. 265, fig.1), non *Baiera ziguiensis* F. S. Meng (1987), established based on a different ginkgoalean specimen from the Lower Jurassic Hsiangchi Formation of Xietan, Zigui County, Hubei Province, China is still available for use.

4. Ginkgoites yangii X. W. Wu & Y. D. Wang, sp. nov.

G. elegans S. Yang, B. N. Sun, G. L. Shen in J. Lanzhou Univ. Nat. Sci. 24: 77, pl. 2, fig. 3, 1988, non *Ginkgoites elegans* Z. Y. Cao (1992). Type: China. Gansu (甘肃): Lanzhou (兰州), Yaojie (窑街), Middle Jurassic Yaojie Formation (窑街组), coal-bearing member, *LP86007* (holotype, Department of Geology, Lanzhou University 兰州大学地质系)

Ginkgoites elegans S. Yang, B. N. Sun & G. L. Shen was originally erected for ginkgoalean leaves from the Middle Jurassic Yaojie Formation of Lanzhou, Gansu Province, China. The authors (Yang et al., 1988, p. 71, 75, 77, pl. 2, figs. 1–6) studied a number of specimens and three of them were figured (*LP86005–LP86007*). However, they did not definitely indicate the type specimen. According to Article 37.1, the name *Ginkgoites elegans* S. Yang, B. N. Sun & G. L. Shen (1988) is not validly published. A new species is here instituted for this morphotaxa, with the specific epithet after the first author S. Yang. One of the figured specimens of *Ginkgoites elegans* S. Yang, B. N. Sun & G. L. Shen (1988. J. Lanzhou Univ. Nat. Sci., 24: 77, pl.2, fig. 3, no. *LP86007*) is designated here as the holotype. The English diagnosis, description, discussion and illustration published for *Ginkgoites elegans* S. Yang, B. N. Sun, G. L. Shen are all transferred to *Ginkgoites yangii* X. W. Wu & Y. D. Wang sp. nov.

5. Ginkgoites elegans Z. Y. Cao (1992)

G. elegans Z. Y. Cao in Acta Palaeont. Sin. 31: 245, text-fig. 2, pl. 1, fig. 8. 1992, non *G. elegans* S. Yang, B. N. Sun & G. L. Shen (1988). Type: China. Heilongjiang (黑龙江): Suibin (绥滨), 26 Well at 443 m, Early Cretaceous Chengzihe Formation (城子河组) member 2, PB16102 (holotype, NIGPAS!).

Ginkgoites elegans Z. Y. Cao (Cao, 1992, p. 233, 234, 245) is a validly published name, although it is found to be antedated by an earlier designation: *Ginkgoites elegans* S. Yang, B. N. Sun & G. L. Shen (1988). As mentioned above, *Ginkgoites elegans* S. Yang, B. N. Sun & G. L. Shen (1988) is not a validly published name according to Article 37.1. It has no status under the nomenclatural code and no priority over other validly published name (Article 12.1). *Ginkgoites elegans* Z. Y. Cao (1992) is, therefore, a legitimate name available for use.

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中国银杏目植物化石的几个命名问题

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摘要　依据《国际植物命名法规》(维也纳法规)第6.4条，我国两种银杏目植物化石具有不合法的形态种名。*Sphenobaiera biloba* S. N. Feng (1977)和*S. rugata* Z. Q. Wang (1984, Dec.) 分别为*S. biloba* Prynada (1938)和*S.? rugata* Z. Y. Zhou (1984, Mar.)的晚出同名。兹遵照国际植物命名法规(第7.3和53.1条)为上述两种植物分别建立新名称。另两个形态种名*Ginkgoites elegans* S. Yang, B. N. Sun & G. L. Shen (1988)和*Baiera ziguiensis* F. S. Meng (1987)在发表时都未曾明确指定模式标本，因而是不合格发表的名称(法规第12和37条)。本文为之分别指定主模式，并建立新种。*Ginkgoites elegans* Z. Y. Cao (1992)一名虽然被*Ginkgoites elegans* S. Yang, B. N. Sun & G. L. Shen (1988)先期占用，因其为合格发表名称，仍可应用，而后一名称不是合格发表的，并不具备命名上的优先权。

关键词　银杏目；似银杏属；拜拉属；楔拜拉属；形态种；命名